Abstract Submitted
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Dirac and Weyl Superconductors in Three Dimensions[1] SHENGYUAN YANG, Singapore, HUI PAN, Beihang University, FAN ZHANG, The University of Texas at Dallas — Inspired by the recent discovery of Dirac and Weyl semimetals, we introduce the concept of 3D Dirac (Weyl) superconductors (SC), which have protected bulk four(two)-fold nodal points and surface Andreev arcs at zero energy. We provide a sufficient criterion for realizing them in centrosymmetric SCs with odd-parity pairing and mirror symmetry. Pairs of Dirac nodes appear in a mirror-invariant plane when the mirror winding number is nontrivial. Breaking mirror symmetry may gap Dirac nodes producing a topological SC. Each Dirac node evolves to a nodal ring when inversion-gauge symmetry is broken, whereas it splits into a pair of Weyl nodes only when time-reversal symmetry is broken. Our physics might be realized in the nodal phase of Cu-doped Bi2Se3 or UPt3.

[1]Phys. Rev. Lett. 113, 046401 (2014).

Shengyuan Yang
Singapore University of Technology and Design

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